

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No: Continuation of USSN 09/037,546, filed March 9, 1998
Applicant: James M. Zavislan
Filed: Concurrently herewith
Title: IMAGING SYSTEM USING MULTI-MODE LASER
ILLUMINATION TO ENHANCE IMAGE QUALITY
Examiner: J. Treas Art Unit: 2872
Attorney Docket: ML-0473C

PRELIMINARY AMENDMENT

Assistant Commissioner for Patents
Washington, D.C. 20231

Dear Sir:

Please amend the above-identified application as follows:

In the title, please insert --TO-- before "ENHANCE".

In the specification, first paragraph of page 1, rewrite as follows:

This application is a continuation of U.S. Patent Application Serial No. 09/037,546, filed March 9, 1998, and is related to my U.S. Patent Application Serial No. 08/966,046, filed November 7, 1997 and Provisional Application Serial No. 60/072,334, filed January 23, 1998.

Please cancel Claims 1-11.

Please rewrite Claims 12, 13 and 14 as follows:

12. (amended) A scanning confocal microscope which comprises a laser providing an incident beam, a beam splitter, a scanner for scanning an image plane in a specimen section in general orthogonal X-Y directions in said plane, said laser being a plural transverse mode laser providing an amplitude distribution having a plurality of lobes in opposing phase relationship to form spaced spots in a focal plane in said section and capable of overlapping spots at one of behind, ahead, or behind and ahead, of said section, and an objective for focusing said spots in said focal plane, a confocal aperture, a photodetector behind said aperture, and optics for focusing return light from the spots deflected by said beam splitter at said aperture.

13. (amended) The microscope according to Claim 12 wherein said objective is movable together in a Z direction, generally orthogonal to said X-Y directions thereby selecting different focal planes of said specimen where said spaced spots are incident.

14. (amended) An optical coherence imaging system for imaging a specimen section, which comprises a source providing light having low temporal coherence propagating in transverse, opposing-phase, multi-mode, a beam splitter which directs the light from said source into a reference arm and a sample arm wherein the light is incident on an image plane in said transverse, opposing phase, multi-mode in which it propagates to said image plane in the specimen section and spatially overlaps at one of behind, ahead, or behind and ahead, of the image plane, a scanner in said sample arm for scanning [each] said specimen in generally orthogonal directions, and also in said sample arm, an objective having an optical axis for focusing said low temporal coherence transverse, opposing phase, multi-mode light at a plurality of spots, a detection arm into which light is directed by said beam splitter from said reference and sample arms, and means for providing images in response to interference of light in said detection arm.

Please add new Claim 18 as follows:


18. A system for imaging a section (or sections) of tissue comprising means for producing a beam having multiple, opposing-phase, transverse propagating modes, means for focusing said beam at a plurality of spots in said section of said tissue in accordance with said multiple, opposing phase, modes in which said modes overlap at one of behind, ahead, or behind and ahead, of the section, and collecting return light from said tissue, and means for detecting said return light combined from said plural spots to provide images representing said section of said tissue.

Remarks

Entry of this Amendment is requested for consideration by the Examiner.

Respectfully submitted,

Dated: August 14, 2001


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Marked-up version of amended Claims 12, 13 and 14.

12. (amended) A scanning confocal microscope which comprises a laser providing an incident beam, a [beamsplitter] beam splitter, a scanner for scanning an image [plan] plane in a specimen section in [generally] general orthogonal X-Y directions in said [plan] plane, said laser being a plural transverse mode laser providing an [intensity] amplitude distribution having a plurality of lobes in [out of] opposing phase relationship[, forming] to form spaced spots in a focal plane in said section and capable of overlapping spots at one of behind, ahead, or behind and ahead, of said section, [outside of said section,] and an objective for focusing said spots in said focal [plan] plane, a confocal aperture, a [photo detector] photodetector behind said aperture, and optics for focusing return light from the spots deflected by said beam splitter at said aperture.

13. (amended) The microscope according to Claim 12 wherein said objective is movable together in a Z direction, generally orthogonal to said X-Y directions thereby selecting different focal [plans] planes of said specimen where said spaced spots are incident.

14. (amended) An optical coherence imaging system for imaging a specimen section, which comprises a [laser] source providing light [which a] having low temporal coherence [and] propagating in transverse, opposing-phase, multi-mode, a beam splitter which directs the light from said source into a reference arm and a sample arm wherein the light is incident on an image [plan] plane in said transverse, opposing phase, multi-mode in which it propagates to said image plane in the [a] specimen section and spatially overlaps at one of behind, ahead, or behind and ahead, of the image plane, a scanner in [each] said sample arm for scanning [each] said specimen in generally orthogonal directions [on said plane], and also in said sample arm, an objective having an optical axis for focusing said low temporal coherence transverse, opposing phase, multi-mode light at a plurality of spots [offset from each other], [in] a detection arm [to] into which light is directed by said beam splitter from said reference and sample arms, and means for providing images in response to interference of light in said detection arm.

Page 1, first paragraph of the specification is amended as follows:

This application is a continuation of U.S. Patent Application Serial No. 09/037,546, filed March 9, 1998, and is related to my U.S. [US] Patent Application[,] Serial No. 08-966,046, filed November 7, 1997 and provisional application Serial No. 60/072,334, filed January 23, 1998.